

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) ~~Biosensor~~ A biosensor for detection of an antigen (6) by means of an antigen/antibody coupling, consisting of the following elements:

- [[A]] a silicon substrate (2),
- [[At]] at least one interdigital electrode pair structure (12) of electrodes (13) arranged in pairs accommodated on the silicon substrate (2) with a spacing between the electrode pairs ~~(13)~~ of maximum 1.0 μ m,
- [[A]] counter-electrode (11) accommodated on the silicon substrate (2),
- [[A]] a reference electrode (9),
- [[A]] a first layer made of protein (4) at least covering over the interdigital electrode structure (12),
- [[A]] a selective second protein layer applied over the first layer which contains a selected capture antibody (5) corresponding to the detecting antigen (6) and which can couple to the antigen,
- with a sensor signal being able to be read out at the interdigital electrode structure (12) if, ~~from a sample to be analyzed which is in contact with the biosensor, the~~ an antigen

(6) is coupled to the capture antibody (5) and by means of an enzyme-marked detection antibody (7) also coupled to the antigen, an enzymatic release of a redox-reactive molecule on the sensor surface (1) occurs.

2. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the first protein layer consists of the ~~proteins~~ Protein A, Protein G or Protein G'.

3. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which for increasing selectivity of the second layer, the capture antibodies (5) ~~feature a directed binding to~~ are immobilized over the interdigital electrode structure (12) by the protein (4) of the first layer.

4. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which, instead of the amperometric readout by means of redox recycling, a signal is detected using alternating current or cyclic voltammetry.

5. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, which is coupled with a potentiostat for readout of the sensor signal.

6. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the sample to be analyzed is provided as fluid on the surface (1) of the biosensor via a flow system.

7. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which interdigital electrode structures (12) and counter-electrode (11) are made of gold.

8. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the reference electrode represents an Ag/AgCl reference electrode.

9. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the reference electrode is integrated onto the sensor chip ~~one reference electrode (9) on the biosensor.~~

10. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the antigen (6) is simultaneously an allergen.

11. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the antigen (6) is a protein, a polypeptide or oligopeptide.

12. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the antigen is ~~a microorganism such as~~ a bacterium or a virus.

13. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 1, in which the antigen is an organic compound ~~such as~~ selected from the group consisting of a toxin, a medicine, a pesticide, anthrax, an antibiotic [[or]] and an aromatic hydrocarbon.

14. (currently amended) ~~Method~~ A method for operation of a biosensor for detection of an antigen (6) by means of an antigen/antibody coupling, which features the following steps:

- ~~Coating of~~ coating a biosensor constructed on a silicon chip with a protein base coating with a protein A, G or G` with simultaneous covering of interdigital electrode pair structures (12) on the surface of the silicon chip[[,]];

- ~~Fabrication of~~ fabricating a further layer on the protein coating which contains a capture antibody (5) which is selected so that it can coupled with the antigen (6) sought[[,]];

- ~~Contacting of~~ contacting the sensor surface (1) with a fluid to be analyzed, with an antigen contained in the fluid being able to be bound selectively to the antibodies of the uppermost layer[[,]];
- ~~Marking of~~ marking the antigen (6) by a detection antibody (7) which is coupled with an enzyme and which simultaneously couples with the antigen (6) [[,]]; and
- ~~Readout of~~ reading a sensor signal by means of a potentiostat through redox recycling, with the enzyme-bound detection antibody (7) causing an enzymatic release of a redox-reactive molecule on the sensor surface and counter-electrode and reference electrode being located in the same flow system as the sensor surface.

15. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 2, in which for increasing selectivity of the second layer the capture antibodies (5) feature a directed binding to the protein (4) of the first layer.

16. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 2, in which, instead of the amperometric readout by means of redox recycling, a signal is detected using alternating current or cyclic voltammetry.

17. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 3, in which, instead of the amperometric readout by means of redox recycling, a signal is detected using alternating current or cyclic voltammetry.

18. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 2, which is coupled with a potentiostat for readout of the sensor signal.

19. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 2, in which the sample to be analyzed is provided as fluid on the surface (1) of the biosensor via a flow system.

20. (currently amended) ~~Biosensor~~ The biosensor as claimed in claim 3, in which the sample to be analyzed is provided as fluid on the surface (1) of the biosensor via a flow system.